

RPM Mozambique Final Report

Thomas Moore

September 2000

Rational Pharmaceutical Management Project
C.A. No. HRN-A-00-92-0059-13

Management Sciences for Health
1515 Wilson Boulevard, Suite 710
Arlington, VA 22209 USA
Phone: 703-524-6575
Fax: 703-524-7898
E-mail: rpm@msh.org

Strategic Objective # 5

This publication was made possible through support provided by the U.S. Agency for International Development, under the terms of cooperative agreement number HRN-A-00-92-00059-13. The opinions expressed herein are those of the authors and do not necessarily reflect the views of the U.S. Agency for International Development.

Recommended Citation

Moore, T. September 2000. *RPM Mozambique Final Report*. Published for the U.S. Agency for International Development by the Rational Pharmaceutical Management Project. Arlington, VA: Management Sciences for Health.

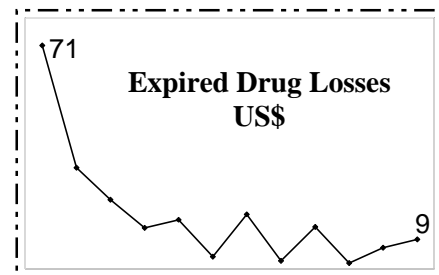
Table of Contents

Table of Contents	iii
Executive Summary	1
Acknowledgments	7
Acronyms	9
Program Overview	11
Objectives	11
Implementation Strategy and Major Activities	12
Challenges Facing RPM Mozambique Implementation	12
Chronological Activity Timeline	13
Program Accomplishments	15
Pharmaceutical Sector Assessment	15
Drug Management	16
Training	16
Strengthening Capacity in the Districts	17
Rational Drug Use	20
Student training support	21
Private Pharmacy Study	21
Tools Development	22
Donor Collaboration	22
Collaboration with the United States Pharmacopeia	22
Sustainability	23
Activities Not Completed	25
Likely Needs at End of Project	27
Lessons Learned	29
Annex 1: Reference Documents Produced During The	31

Executive Summary

This is the closing report for the USAID funded program in Mozambique, with the global Rational Pharmaceutical Management (RPM) project scheduled to end June 30, 2000. This report shows results of the various program activities, which evolved from an initial pharmaceutical sector assessment in 1993, when poor drug management skills of health professionals at central and provincial levels were identified as an important limiting factor for improving the drug-supply system.

Strengthening capacity in the districts of Mozambique's provinces was a major area of focus for the RPM program, and has led to significant improvement in drug management. For example, since RPM began its technical and financial support of district medical and pharmacy directors in 1998, the value of drug losses due to expiration dating has fallen an average of 87% (\$71-\$9) in reporting districts. In fact, 39% of the 57 district facilities recently reporting showed *zero* loss of drugs due to expiration. Pharmacy managers are understanding that monitoring a drug's expiration date and comparing it with average monthly consumption data will allow the redistribution of unneeded quantities of drugs to health facilities that need them and can use them before they expire.



At the end of the project RPM has fully implemented drug management activities in six of Mozambique's 10 provinces, with partial implementation in two other provinces. By the time RPM support ends a total of 118 districts and 137 health facilities throughout the country will have developed drug management programs and on-going supervision.

As part of program support, RPM provided financial assistance for the drug management activities using a decentralized approach. Funds were provided directly to provincial medical and pharmacy directors who managed funds, filed expense reports with RPM, and gained valuable financial management experience in the health system's decentralizing environment.

The program activities actually began with collaboration of the Ministry of Health, Pharmacy Department in 1995. RPM developed training materials, adapted them to Mozambique policy, and with a core of local experts trained 162 medical and pharmacy personnel through a series of national, regional and provincial training courses from 1995-1997. Participants of the courses became leaders of the CPS (capacity building, planning, supervision) strategy later employed for capacitating staffs of the districts.

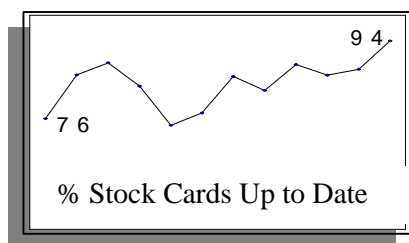
BASIC AREAS

*Stock Management
Inventory Control
Drug Distribution
Information System
Rational Drug Use*

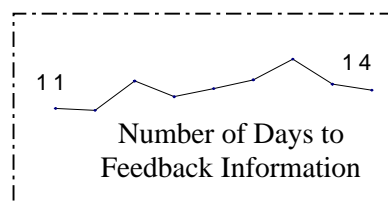
In 1998, RPM conducted a study to test the original 162 participants in five basic areas of drug management. With an average score of 79% (range 73-88%) combining all five areas, course participants demonstrated they retain

a working knowledge of basic procedures, whether they took the courses in 1995, 1996 or 1997. Utilizing provincial directors trained in RPM courses as facilitators, CPS (capacity building, planning, supervision) implementation at the district level began in July 1998, and led district facility staffs in eight provinces to adopt management tools for improving their work. The supervisory component of CPS provides key indicators to supervisors for pointing out weak management areas. Armed with this information, supervisors are able to target continuing education for local managers.

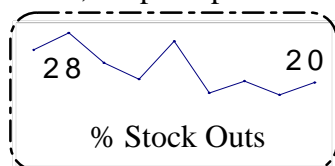
One of the drug management indicators the *% of Stock Cards Up to Date* shows improvement from an average of 76% when facilities began to monitor this indicator to the most recent 94%. Generally it is accepted best practice to manage drugs through the use of individual stock cards, to record movement of drugs into and out of the health facility. Now that more personnel are using the cards, this is a good indicator they are also better controlling inventories.



Having a management information system that allows feedback of drug use data in a timely manner, is a must for a health system to accurately quantify drug and supplies needs. The drug management indicator, *Elapsed Days to Send Consumption Data*, measures how frequently facility managers are complying with health system feedback timelines. According to policy, data should be sent by the 10th of the next month. As you can see from the graph, reporting facilities are not complying with the requirement and in fact have worsened with an increase to 14 days for feeding back consumption data to the warehouse as compared to 11 days when first measured. Supervisors must monitor this activity much closer and take measures to assure that pharmacy directors comply with the procedure.



The indicator *% Stock Outs*, measures a health facility's ability to have drugs and supplies available when ordered by the prescriber. Even when drugs are selected, ordered and stored appropriately, if the correct ones are not available when the patient needs them, the pharmaceutical supply system has failed. The consequences of non-treatment because of unavailability of drugs could include any of the following: a worsening health condition, possible death, or perhaps loss of trust in the health system by the patient. In Mozambique, drugs are purchased centrally and distributed to provinces and subsequent district facilities by a push system. This means that the central agency decides *which* and *how many* drugs and supplies ultimately reach health clinics. The push system makes efforts to improve drug availability by individual health centers a more difficult task. Even so, of the district health facilities reporting this indicator, there has been some improvement in the area of stock outs, which decreased from 28%, when the first measurement was taken, to a more recent 20%.

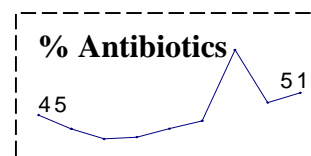


Rational drug use is one of the primary components of drug management and encompasses *use* by the prescriber when he/she prescribes a drug, *use* by the dispenser when he/she dispenses the



drug to the patient, and lastly, *use* by the patient. In Mozambique, the district health director, also a prescriber, must authorize drug requisitions. From the beginning, the RPM drug management strategy included the practice of joining the two professionals (prescriber-dispenser) in all activities. This approach has been well received, and provides a forum to resolve drug supply issues.

One of the rational drug use indicators is the *% of Patients Prescribed Antibiotics*. This indicator draws attention to unnecessary prescribing of antibiotics, which directly contributes to excessive cost, but could also contribute to development of antibiotic resistance, depending on how the antibiotics are prescribed. Initially in the districts there was an overall favorable decline in antibiotic prescribing practices, but later results show an increase to 51% from the original figure of 45%. The local medical directors in respective provinces must investigate the cause of the increases to see if they are justified. Mozambique has recently gone through periods of cholera epidemic, typhoons and flooding, thus related health conditions and water borne infections may justify the need for the increased antibiotic prescribing.



Other indicators are being calculated by district facilities both during supervisory visits and on demand, often monthly, by provincial supervisors. When RPM support is no longer available, it is expected that supervision will continue through monitoring of indicators. It is hoped that on-site supervisory visits will continue as well, but the poor financial situation of local governments may make this a big challenge. RPM has estimated that US\$ 63,200 the first year, and US\$ 31,600 the 2nd and subsequent years will be required to continue site visits.

Another significant activity took place in 1998 when RPM provided technical assistance to the Ministry of Health Pharmacy Department for drafting a *manual of pharmacy operations*. The draft manual contains logistics policies and procedures, and various control forms to track the movement of drugs and supplies from central warehouse ? provincial warehouse ? health center/hospital ? health post. In 1999 the procedures manual evolved into the *Normalized System of Drug Management*, and the MOH established procedures specific to four health facility types, health posts, health centers, hospitals and provincial warehouses. The MOH trained provincial directors on the new system in 1999, and plans to expand training to district staffs in 2000, after which the Pharmacy Department expects to implement the new procedures.



To round out support in the various areas of the pharmaceutical sector, RPM collaborated with the Institute of Health Sciences in Maputo and the Eduardo Mondlane Medical School's research department, and conducted a study of the private pharmacy sector to assist the MOH in planning for health finance reform.

At the Health Sciences Institute, drug management training materials used in RPM activities were adapted and included in the pharmacy technician curriculum at the Institute. In 1999 the RPM program supported internships for 15 pharmacy tech students who needed the practicums

for graduation. The interns received hands on experience in hospitals, health centers, and provincial warehouses, and completed joint projects on various topics of rational drug use.

At the Medical School's research department, RPM established a small grant in 1998/1999 to promote rational drug use. Approximately 80 students were trained in research methodology, prepared study proposals, collected and analyzed data, and presented findings and recommendations at a final conference. Students followed-up their recommendations by meeting with respective departments of the Ministry of Health. One such recommendation was to improve the prescriber's skills in writing prescriptions, which resulted in a workshop sponsored by the Medical School and which was attended by various Ministry of Health physicians and other prescribers.

A private pharmacy study was conducted at the request of the MOH to show how much money actually flows through the private sector. Twelve pharmacies were surveyed and data such as average: monthly expenses on drug purchases, monthly operating costs, number of client visits, and drug spending by Clients during one pharmacy visit were collected. Using these data RPM calculated that private pharmacies make an average annual profit of 28% which is similar to the gross profit figures of United States pharmacies (26%-30%) as reported by the National Community Pharmacists Association. The MOH is reviewing the information provided by RPM along with health expenditure studies of the public and private sectors from other sources.

The United States Pharmacopoeia (USP) has a separate cooperative agreement under the RPM project, and Management Sciences for Health (MSH) collaborated with USP in the area of drug information availability in Mozambique. USP provided drug monographs in the Portuguese language to participants of the provincial training courses mentioned above. During USP drug information seminars held in the country, MSH introduced national and provincial participants to hospital drug formulary and drug use review systems.

Pharmaceutical sector donors in Mozambique formed the "pooling" concept in 1998 to allow the MOH and provincial directorates of health to build management experience in purchasing pharmaceuticals for the entire health system with donated funds. The pooling committee established measurable targets to meet objectives of the MOH strategic plan in 1999. MSH began sharing results of RPM drug management activities with the donor committee at that time.

RPM/MSH encountered various challenges during program implementation in the provinces relative to the gradual decentralization policy established by the government. In essence, there was no formal decentralization plan, and provincial staffs often lacked skills, finances, and clear authority to make significant changes.



Drug management in Mozambique's health facilities has been strengthened by the capacity building efforts described above. To sustain and improve the knowledge and skills learned during the program, RPM recommends that national and provincial health directors support on-going continuing education with regular supervision and monitoring for pharmacy and medical directors in all districts.

Part of the drug management-strengthening program has been to teach facility managers how to quantify drugs and supplies needed for their facilities. RPM recommends that the Pharmacy Department begin to use these data to quantify drug needs for the whole country, since consumption data calculated in a systematic way are more reliable than distribution data, currently used to purchase drugs for Mozambique.

Finally, to kick off the use of consumption data for quantification, RPM suggests that a one-time national drug estimation activity be conducted in representative health facilities throughout the country, which takes morbidity data and drug stock-out data into account to establish a baseline of needs.

Annex 1 contains a list of reference documents produced by RPM/MSH during the Mozambique program.

Acknowledgments

RPM would like to acknowledge the following persons for their support of the Mozambique activities, and to the many others who have contributed to the program. Although not listed by name, without the support of the provincial, medical and pharmacy directors of the following provinces, the RPM program would not have been successful.

Cabo Delgado
Gaza
Inhambane
Maputo Province and City
Nampula
Niassa
Tete
Zambezia.

Ministry of Health

Joaquim Durão	Director of Pharmacy Department
Chonguiça M. Chonguiça	Former Director of Pharmacy Department
Rathod K. Bachubai	Director of Essential Drugs
Benedito Chaque	Pharmacy Department
Isaura Possolo	Pharmacy Department
Clara Ferrão	Training Department

School of Medicine

Leopoldo da Costa	Research Department-FAIACS
Esperança Sevene	Staff
Alda Mariano	Staff

Maputo Central Hospital

Sam Patel	Director of Medical Department
Bachira Rugnate	Staff

Institute of Health Sciences in Maputo

Júlio Langa	Pedagogical Director
Sharadchandra C. Unewal	Former Director of Pharmacy Curriculum

UNICEF

Jonas Chambule	Health Coordinator
Valigy I. Valigy	Medical Consultant
Gertrudes J. Mehatine	Medical Consultant

USAID

Okey Nwanyanwu
Aurelio Gomes
Laura Slobey
Armand Utshudi
Anthony Boni
Susan Bacheller

Mozambique
Mozambique
Formerly-Mozambique
Formerly-Mozambique
Cognizant Technical Officer-Washington
Washington.

DONORS

Isabel Soares
Joris Jurriens
Ana Helena Azedo

Swiss Cooperation
Dutch Embassy
Norwegian Embassy

MSH

Anthony Savelli
Douglas Keene
Elvira Beracochea
Jean Pierre N. Kasongo
Sharadchandra C. Unewal
Juan P. Guevara
Maria Miralles
Jean Pierre Sallet
Guttorm Folkedal
Jorge Tojais
Mehreen Butt

Director of global MSH/RPM project-Washington
Deputy Dir. of global MSH/RPM project-Washington
Former Dep. Dir. of MSH/RPM project-Washington
Technical Advisor-Nampula Province
Technical consultant--Maputo
Medical/Pharmaceutical Consultant-Peru
Sr. Program Associate-Washington
St. Program Associate-South Africa
Pharmaceutical Consultant-Norway
Field office coordinator-Maputo
Sr. Program Assistant-Washington

USP

Keith Johnson
Nancy Blum
Lloyd Vetter

Director of global USP/RPM project-Washington
Former manager of Mozambique Program-Washington
Manager of Mozambique Program-Washington

Acronyms

CPS	Capacity building, Planning, and Supervision
FAIACS	Foundation for Applied Research, Medical Faculty, Maputo
ICSM	Health Sciences Institute in Maputo
INRUD	International Network of the Rational Use of Drugs
MSH	Management Sciences for Health
MOH	Ministry of Health
RPM	Rational Pharmaceutical Management
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USP	United States Pharmacopoeia

Program Overview

At the request of the USAID mission in Mozambique, RPM conducted a pharmaceutical sector assessment in 1993. Based on the findings, the Pharmaceutical Department of the MOH asked for assistance in strengthening capacity of pharmacy and medical staffs, both at the national and provincial levels, in the areas of drug management and rational drug use. Capacity in these areas had ebbed due to brain drain when Mozambique gained its independence from Portugal, followed by a 16 year civil war. USAID began funding the RPM program in Mozambique in 1995 with field support.

In collaboration with the MOH, RPM developed training materials and practical exercises in logistics management and rational drug use, which incorporated MOH drug policy and procedures. RPM capacitated a group of national facilitators, who began the training activities. By 1997, through collaborative financial support of RPM, UNICEF and the Swiss Cooperation, 162 pharmacy and medical personnel were trained at central and provincial levels. RPM estimates that approximately \$50,000 was leveraged from the donors for these training activities.

In 1998, using RPM's CPS (capacity building, planning, supervision) tool, district staffs began implementation of basic drug management procedures. The tool includes monitoring indicators for on-going supervision. By the end of the project, RPM has technically supported implementation of the CPS strategy in eight of the country's ten provinces, including approximately 118 districts and 137 health facilities.

As part of program support, RPM provided financial assistance for the capacity building, drug management activities using a decentralized approach. Funds were provided directly to provincial medical and pharmacy directors who managed funds, filed expense reports with RPM, and gained valuable financial management experience in the health system's decentralized environment.

Objectives

The RPM activities supported USAID's *SO 3: increased use of key child health and nutrition interventions*, and the Mozambique Mission's program objectives (*PO*) *3.1.3: more health facilities with trained staff* and *PO 3.3: strengthened provincial management of MCH/FP service delivery*. The basic RPM program objectives were to:

- Capacitate a core of national trainers in drug logistics management and rational drug use
- Provide technical assistance to the Pharmacy Department, MOH to harmonize pharmacy procedures nationwide
- Capacitate provincial pharmacy and medical directors in basic drug management techniques, and to function as supervisors of district health facility staffs
- Support capacity building of district facility staffs, using RPM drug management CPS strategies
- Support supervisory visits by provincial supervisors to district health facilities
- Evaluate the new harmonized pharmacy procedures once implemented in the country

Implementation Strategy and Major Activities

RPM strategy for the Mozambique program included the following:

- Develop drug management/rational drug use training materials with adaptation to the Mozambique situation
- Capacitate a group of trainers
- Conduct training workshops for national and provincial staffs
- Adapt the CPS tool, originally developed by RPM in Ecuador, to the Mozambique situation
- Provide technical assistance to provincial directors for implementing the CPS drug management tool
- Provide financial support for training and supervision

Major activities included the following:

- One national drug management course
- Three regional drug management courses in north, central, and south geographical zones
- Two provincial drug management courses
- Technical assistance to harmonize national pharmacy procedures
- Technical assistance to implement the CPS drug management tool in eight provinces
- Financial assistance to support supervision activities in eight CPS provinces

Challenges Facing RPM Mozambique Implementation

As RPM was beginning to field-test the CPS tool for Mozambique in 1997, the pharmaceutical sector entered an independent audit, funded by sector donors. The audit was conducted to document the extent of drug diversion and graft that had permeated the entire MOH system. As a result, RPM was asked to delay all planned activities from October 1997 to February 1998.

A new Pharmacy Department director of the MOH was appointed to clean up the drug diversion problem in September 1997. Because of other demands on this new counterpart, RPM was further delayed, but in May of 1998, conducted the field test of the CPS tool in Gaza province.

From January to March 2000, Mozambique was inundated with heavy rains and cyclones. Approximately one million citizens were displaced from their homes, including health workers. Many health facilities were destroyed, and overland transportation routes were knocked out. The standing water caused an increase in the population of mosquitoes, which worsened malaria, already endemic in the country. Unaffected health workers were mobilized to help with the disaster. Thus many of the directors and health workers involved in RPM activities had to divert their attention to these matters. For those reasons, RPM was not able to fully implement the CPS drug management strategies in all 10 provinces of the country. By the end of the project, RPM had implemented CPS in eight provinces, though partially in two of the provinces, but with no activity in two others.

Also because of the floods, the MOH could not implement the new *Normalized System of Drug Management* procedures in the provinces and districts. For this reason RPM was unable to carry out an evaluation of the new procedures as planned.

Chronological Activity Timeline

RPM activities in Mozambique began in 1993 with a pharmaceutical sector assessment, and ended in May 2000 with support of supervisory visits by provincial directors.

Table 1: Activity Timeline

Date	Activity
Dec 1993	Pharmaceutical Sector Assessment
Jun 1995	National drug management course in Maputo
Oct 1995	Central region drug management course in Chimoio
Jun 1996	Southern region drug management course in Namaacha
Sep 1996	Northern region drug management course in Chokas Mar
May 1997	Provincial drug management course in Gaza province
Sep 1997	Provincial drug management course in Zambesia province
May 1998	CPS drug management tool field tested in Gaza province
Sep 1998	CPS drug management strategy implemented in Niassa and Nampula provinces
Nov 1998	CPS drug management strategy implemented in Tete, and Inhambane provinces
Dec 1998	Supervisory activities implemented in Niassa, Nampula, Tete, Inhambane
Feb 1999	Study measuring course participant knowledge of basic drug management practices
Jan 1999	Study of private pharmacy sector
Mar 1999	CPS drug management strategy implemented in Cabo Delgado province
May 1999	Supervisory activities implemented in Cabo Delgado province
Sep 1999	CPS drug management strategy implemented in Maputo Province and City
Oct 1999	CPS drug management strategy implemented in Gaza Province
Nov 1999	CPS drug management strategy implemented in Zambesia Province
Dec 1999	Supervisory activities implemented in Maputo Province and City
Jan 2000	Questionnaires developed for evaluating new harmonized pharmacy procedures
Mar 2000	Supervisory activities implemented in Zambesia province
Jun 2000	Project closed

Program Accomplishments

Pharmaceutical Sector Assessment

The assessment was led by a team of five persons, two RPM international consultants and three local economists, and took place during the last quarter of 1993. Health facilities surveyed were located in the capital, Maputo, and in five provinces, representing north, central and south regions of the country.

Although details of the assessment can be found in RPM's publication, *Ministry of Health of Mozambique, Mozambique Pharmaceutical Sector Assessment Final Report* several important findings are mentioned here. See **Annex 1** for a listing of this and other documents produced during the RPM Mozambique program.

Procurement capabilities of local staffs at the monopolistic MEDIMOC parastatal company were considered to be adequate. For example, only drugs listed on the National Formulary were purchased and the provincial medical stores obtained their drugs and supplies from the central stores. In addition, competitive tender was used for 91% of the purchases, and MEDIMOC was able to obtain prices equal to or better than the average international price, 76% of the time.

However, inventory record keeping practices were found to be problematic. The warehouse stock cards indicated that items in stock were on average 129% of the actual count. For the records kept in the administrative offices, from which order quantities are calculated, were found to be on average 159% of the actual count.

A list of 21 tracer drugs, selected for study as essential drugs for health care delivery, were found to be available 67% of the time in central stores, 80% in provincial stores, and 59% in health centers and hospitals surveyed.

Findings on drug utilization in Mozambique were mixed, when comparing these and other drug use data with those of countries studied by the International Network for Rational Use of Drugs (INRUD). For example, 52% of patients in Mozambique are prescribed antibiotics compared with 43% for INRUD countries studied. The average dispensing time of 13 seconds was much less in Mozambique than the average 59 seconds of countries included in the INRUD study. Patient knowledge of correct use of dispensed drugs was 53% in Mozambique compared with 64% in INRUD countries. On the other hand, Mozambique showed more favorable results than INRUD averages as follows: for the percentage of patients receiving injectables, 18% in Mozambique, 25% INRUD; and drugs prescribed by generic name 99% in Mozambique versus 67% for the INRUD average.

In light of the findings and because of poorly trained personnel throughout the pharmacy sector, the MOH in Mozambique felt that RPM could best contribute to the country's objectives by providing training in drug logistics, from the top down. This led to the establishment of a national coordinating team composed of RPM, pharmacy personnel at the MOH and Institute of

Health Sciences, and medical personnel at the School of Medicine. The team developed a strategy to train national, provincial and district personnel in basic drug logistics management.

Drug Management

Training

The RPM and Ministry of Health coordinating team outlined a plan for training target personnel and developing the training materials. The team selected the *Managing Drug Supply Training Series* as the basis for the training materials. The materials were adapted to local policy and translated into the Portuguese language. The 16 drug management topics covered were:

- National Drug Policy
- Strategies of Drug Supply
- Managing Storerooms and Warehouses
- Inventory Concepts
- Stock Control
- Managing Inventory for Drug Acquisition
- Management Information System for Drug Supply Systems
- Distribution Strategies
- Drug Kit Distribution System
- Financing Drug Supply Systems
- Systematic Reduction in Drug Costs
- Rational Use of Drugs
- Problems with Irrational Drug Use
- How to Learn About Drug Use Problems
- Role of the Pharmacist in Promoting Rational Drug Use
- Strategies to Improve Use of Drugs

The program plan included a national course to build training capacity at the central level and three regional courses to build training capacity in the provinces. The national course was held in June 1995 in the capital, Maputo. The regional courses were held in central, southern, and northern geographical zones: Chimoio in October 1995, Namaacha in June 1996, and Chokas Mar in September 1996, respectively.

The same training materials were used for two provincial courses to test their suitability for the health facility level. The provincial courses were held in Xai-Xai, Gaza province in May 1997 and Quelimane, Zambesia province in September 1997. Due to lessons learned from the provincial courses, the formal course approach was discontinued since on-site practical training was thought to be more appropriate for applying basic management techniques to daily work activities for health facility personnel in the districts.

RPM conducted a study to measure knowledge of basic practices in drug management and rational drug use for the 162 participants of the six training courses mentioned in the paragraphs above. The study questionnaire contained 22 questions in five skill areas--stock management,

inventory control, distribution, management information system, and rational drug use. After testing the questionnaire locally, they were distributed to all 162 participants who work throughout the 10 provinces of the country. The questionnaires contained a cover page explaining the purpose of the study and instructions for completing the self-test questionnaire. Participants were not monitored and no restrictions were made concerning the use of reference materials while answering the questions. Responses were kept confidential, by not requiring participant names on the questionnaires.

The study was conducted during the first quarter of 1999. Combining results of both prescribers and pharmacy personnel, average scores for the five areas studied were: 79% stock management, 79% inventory control, 88% drug distribution, 78% management information system, and 73% for rational drug use.

Drug Management Course Participant Study

% CORRECT	STOCK MAN.	INV. CONTR.	DIST.	MIS	RDU	AVERAGE
All (N=47)	79	79	88	78	73	79
Prescriber (N=10)	68	77	78	85	70	75
Pharmacy (N=37)	82	79	91	76	74	80

The average overall score of 79% (range 73-88%), demonstrated that course participants still have a working knowledge of drug management and rational use procedures regardless of when they participated in the courses.

Strengthening Capacity in the Districts

To build upon the expertise gained from the drug management courses mentioned above, RPM chose to use the CPS (Capacity Building, Planning, and Supervision) strategy, first applied in Ecuador by the RPM project. In collaboration with the MOH, RPM adapted the tool and expanded it for the Mozambique environment to train district personnel in sound drug management techniques for the decentralized health-care setting. Personnel, who had been trained in the national, regional and provincial drug management courses mentioned above, learned the CPS techniques from RPM and actually put the CPS strategy into practice.

The strategy involves setting up a supervisory team of pharmacy and medical administrators, who use the CPS tool to prepare and conduct drug management one day sessions for pharmacy and medical directors of warehouses, health centers, and hospitals. In Mozambique, teams were set up at the provincial level. The practical CPS tool consists of a manual with specific drug management information, instruction, checklists, reference tables, and indicators. See the **Tools Development** section of this report for further information.

Using CPS, pharmacy and medical staffs analyze their facility's problems, improve their problem-solving skills, and plan activities to implement identified solutions. The Mozambique

CPS tool encompasses five modules that can be implemented in one or multiple sessions, depending on the local situation. The five drug management sessions are:

- Evaluating Your Storeroom
- Procurement of Drugs and Supplies
- How to Order Drugs and Supplies; Distribution Systems for Health Facilities
- Receiving Drugs and Supplies, Using Information Systems, and Comprehending Costs
- Rational Use of Drugs

As sessions are completed, pharmacy and warehouse managers plan their individual activities for the following month. Supervisors review plan-implementation during follow-on site visits.

The CPS strategy emphasizes self-monitoring using indicators, but it is recommended that a member of a supervisory team visit the facilities at least monthly at the start of CPS implementation. This allows supervisors to continue capacity building exercises, document improvements in drug management, and review problems in the facilities. As part of the strategy, a series of drug management tools permit local pharmacy personnel and warehouse managers to identify and analyze their operational problems.

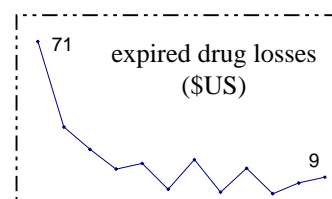
The drug management and rational use indicators developed for Mozambique are:

- The value of expired drugs and supplies during the last month
- Percentage of stock cards up to date
- Percentage of items that were out of stock at least once during the last month
- Elapsed time since drug order was placed and items were received
- Number of days elapsed before consumption data was sent to the warehouse
- Average number of drugs prescribed per patient visit
- Percentage of patients who were prescribed antibiotics
- Percentage of patients who were prescribed injectables
- Percentage of drugs prescribed with the drug code from the National Formulary

Since the indicators are designed to serve as a monitoring tool and a simple activity that can be accomplished by local staffs, the sample size is small. For the first four indicators above, managers randomly choose 10 drugs that were received or dispensed last month. For the last four indicators, which are rational drug indicators, 30 prescriptions are chosen at random from the most recent ones filled in dispensing pharmacies.

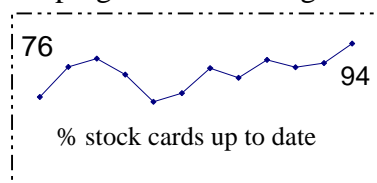
RPM periodically collected data from provinces where CPS was being implemented. For the five drug management indicators the following results were obtained:

- The indicator, *value of losses due to drug expiration*, is important to monitor because of poor drug management habits of MOH personnel, a difficult economic crisis in the country, and donor insistence that the government share a larger cost of supplying drugs. Each monitoring period, staffs calculate the value of expired drugs in their health facilities for the past

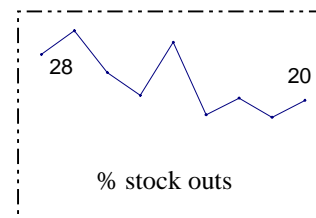


month. RPM periodically collected the data and averaged them to create this graph. Overall the loss has declined 87%, from (\$US 71- 9). Although the values are not great when measured in US\$, they were considered significant in local currency at the district level.

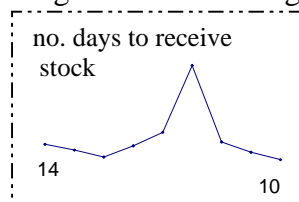
- Keeping individual drug stock cards up to date coupled with an inspection of in-stock drugs and supplies is a very basic way to monitor inventories, to assure there are enough drugs and supplies, that they are not expired, and that they are protected from heat, light and pests. In Mozambique district health facilities have consistently improved their record keeping practices as shown to the left.



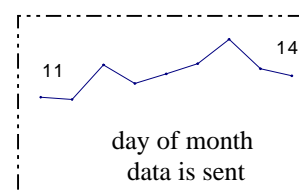
- This indicator measures the percentage of items that were out-of-stock the month before the monitoring activity took place. Obviously, without drugs available when the patient needs them, the supply system has failed. Notice that health facilities in Mozambique on average have decreased the percentage of drugs out-of-stock since 1998 when the CPS activities first began. This is quite likely due to improved record keeping and monitoring of lead-time to receive drugs at the health facilities, and possibly due to improved levels of stock in the provincial warehouses.



- Drug storeroom managers should know the amount of time it takes to receive drugs and supplies once they have placed an order. This indicator measures the number of days that have elapsed since an order was placed to the warehouse until it was received by the health facility. Since monitoring began, the average number of days needed to receive an order has declined 29% (14 > 10 days). Armed with these data and the average monthly consumption quantity for each item, managers can better maintain their inventories to avoid stock outs.



- Health facilities must prepare drug consumption data, and send it to higher levels so procurement of the correct quantities of drugs and supplies can take place. The requirement in Mozambique is to send the data by the 10th of the next month. On average facilities are not complying with this procedure, and steps must be taken to have drug managers comply as soon as possible. At present the procurement department uses quantities distributed to health facilities by the provincial warehouses for procurement, when they should be using consumption data supplied by health facilities. RPM expects this will begin once the provincial warehouses are computerized by the MOH, which could happen within a year.



RPM has found that in Mozambique, the CPS strategy provides a mechanism for long-term professional empowerment and hands-on practical implementation, and therefore will likely sustain itself long after the project has ended.

Student Training Support

To round out support of the pharmaceutical sector in Mozambique, RPM established programs with the Eduardo Mondlane Medical School and the Institute of Health Sciences in Maputo in 1998 and 1999, respectively. The programs introduced medical students to RDU study methodology and provided practice in developing proposals, collecting and analyzing data, and preparing a report of findings. Pharmacy technicians at the Institute of Health Sciences received support from RPM in the form of internships in health centers, hospitals and warehouses, where students conducted studies and presented findings at the end of their internships.

Private Pharmacy Study

In 1997 the government of Mozambique passed a new drug law allowing the development of private pharmacies. Prior to that “private” pharmacies consisted mainly of quasi-government pharmacies managed by the FARMAC association. The MOH is reviewing its options for reforming health finance, and asked RPM to assess how much money actually flows through the young private sector.

Of the 80 private pharmacies in the country, RPM randomly selected 12 pharmacies, six privately owned, six FARMAC, and interviewed owners and clients using prepared questionnaires. Managers reported average monthly expenses on drug purchases of US\$3,084, average monthly operational costs of US\$1,220, and average number of client visits of 1,300 per month. Clients reported spending an average of \$4.61 per visit. Using these data RPM calculated that private pharmacies make an average annual profit of 28%. The profit appears similar to the gross profit figures of United States pharmacies (26%-30%) as reported by the National Community Pharmacists Association in 1997.

A total of 353 of the clients studied were prescribed drugs and 20% responded that they were unable to buy them for the following reasons: unavailable for purchase (49%), couldn't afford the price (36%), or decided not to buy for other reasons (15%). For prescribers who consulted the clients 91% work in government facilities and 68% are physicians.

Drug selling prices varied wildly from pharmacy to pharmacy, and it appears that the government is not monitoring pricing schemes very well. For example, the data collected for 13 commonly prescribed drugs showed selling price differences of 25% to 7511%.

RPM suggested that any health reform program should consider that visiting private pharmacies to purchase drugs is a burden for many clients. Also, RPM suggested several follow-on studies to broaden MOH understanding of private pharmacy sector forces. Study topics suggested are: a comparison of urban and rural private pharmacies, demand for private pharmacy services, licensure requirements, financial benefit to the government from private pharmacies, and patient education of private market forces.

Tools Development

While RPM was adapting the CPS strategy for Mozambique, it became clear that district facility managers needed a basic tool in simple language that could easily guide them in their daily work. Thus, starting with the manuals used in the original drug management training courses, RPM extracted the main points, simplified the text, and combined the topics into five sessions. The five sessions are combined into a manual, which is designed for either self-instruction or instruction by a supervisor. Each session contains the following:

- a one to three page simple discussion of the drug management topic using graphics for ease of understanding
- checklists to identify problem areas in the pharmacy and storeroom
- a planning tool to record problems, establish solutions for each problem and state when and who will carry out the plan
- one or more indicators with brief instructions of how to collect data, calculate the indicator, and frequency for sending the information to supervisors

In the districts where CPS was implemented, each drug manager and medical director received a one-day instruction on use of the tool, following which individual drug management activities began. Impact of this work can be seen in the CPS indicator sections of the report.

Donor Collaboration

An estimated 90% of drugs and supplies needs of the government health system are donated. In concert with the sector wide approach (SWAP) to health development underway in Mozambique, the donors established a committee and initiated the “pooling” of resources concept in 1998 to reduce the number of restrictions placed on these funds by a particular donor. In “pooling” the donor funds are transferred directly to the MOH or provincial Directorate of Health and the money is managed solely by the agency for the purposes agreed upon by the donor committee. The pooling arrangement is monitored using measurable objectives set by the committee and based on the MOH strategic plan. The objectives were first drafted in 1999. The RPM/MSH program of activities includes indicators connected to the MOH strategic plan, and MSH began sharing results of activities with the donors at that time.

Collaboration with the United States Pharmacopeia

The RPM project is composed of separate cooperative agreements for Management Sciences for Health (MSH) and the United States Pharmacopoeia (USP). As in other RPM countries, MSH collaborated with USP in the area of drug information in Mozambique. Materials used in the drug management courses conducted in the country included drug monographs prepared by USP in the Portuguese language. Other activities included MSH’s presentations on use of hospital formulary and drug use review systems for hospitals and health centers during USP drug information seminars held in Maputo in 1998 and 1999, and in Beira in 1999.

Sustainability

Sustainability has always been a goal of RPM's work in Mozambique. By continuing to support the drug management supervisory activities in the country, RPM hoped that supervision would eventually become an integral part of normal MOH drug management functions, which it has. Although on-site supervision may not continue on a regular basis, remote supervision using indicator monitoring will, as long as provincial administrators continue to support it.

As evidenced by the new "Normalized System of Drug Management" instituted by the MOH in 1999/2000, much of the RPM technical work done with the central level MOH staff in 1998 has been incorporated into the system procedures. The technical work involved harmonizing storeroom/warehouse practices for all provinces, culminating in the development of standardized control forms and procedures.

The MOH adapted the standardized control procedures into four manuals for each of the four types of health facilities (health posts, health centers, hospitals, and warehouses). The procedures are being implemented by the MOH using RPM's training methodology, CPS (capacity building, planning, and supervision).

RPM believes that MOH drug management capacity will continue to be reinforced through the new Normalized System of Drug Management, and hopes that funds will be identified to provide continued support of the on-site supervisory component.

Activities Not Completed

RPM was able to fully implement the CPS drug management strategy in six provinces and partially in two others. However, because of other MOH program commitments by district staffs throughout the project, and because of heavy rains and cyclones in the country between January and March 2000, the two remaining provinces received no RPM support.

Also because of the floods, the MOH Pharmacy Department could not implement the new *Normalized System of Drug Management* procedures in the provinces and districts. Therefore, RPM could not carry out the planned evaluation of the new system.

Likely Needs at End of Project

To improve the drug supply system in Mozambique, RPM recommends the following after the project has ended.

- 1 Financial and technical support for provincial health directors is needed for on-going continuing education to district staffs in basic drug management and rational use procedures. The support should include technical and financial assistance for regular supervision and monitoring of pharmacy and medical directors in all districts, and the use of drug management indicator data to identify problems and monitor improvements in drug delivery.
- 2 Technical and financial assistance will be needed by the MOH Department of Pharmacy to quantify national drug and supplies needs. The MOH currently uses data from previous drug distributions, which does not take stock outs and expired drug quantities into account. Thus, stock outs of drugs continue to occur. The output would be a list of national drug and supplies needs from a quantification study of consumption and morbidity data.
- 3 Building on the national quantification described in the paragraph above, the MOH needs to promote the use of consumption data from districts and provinces. Consumption data use will allow the MOH to more accurately quantify future national drug needs. To accomplish this the MOH will need financial and technical support for a combined manual/computerized information system for provincial warehouses. Data from this system will be fed to the national procurement center for more accurate purchasing of drug and supplies needs.
- 4 The MOH Department of Pharmacy requested an evaluation of the *Normalized System of Drug Management* procedures. The new procedures were established in 2000 and some training has been provided to health facility managers. Further training, publishing and dissemination of the procedures are needed. Once the system is fully implemented, then an evaluation should be conducted to point out weaknesses in the procedures and suggestions made for improvement.
- 3 In concert with planned health sector reforms, technical assistance to improve the drug and supplies cost recovery scheme used in government health facilities is needed. Specific activities would need to be coordinated with the planning commission of the MOH.
- 4 In 1999, Mozambique established a plan to gradually implement the Integrated Management of Childhood Illness (IMCI) scheme. Technical assistance will be needed for the drug management component of IMCI.
- 5 Mozambique is integrating several of its vertical health programs like Tuberculosis and Malaria. Technical assistance for selection, procurement, and proper use of drugs will be needed to comply with WHO treatment regimens and to prevent the use of drugs that have developed resistance to these diseases.

- 6 The donor community working in the pharmaceutical sector of the MOH has organized a committee to better manage donor activities within the country. Many of the members have health experience but no real drug management expertise. Technical assistance is needed to better focus and coordinate donor support and to set meaningful objectives for the pharmacy sector.
- 7 After many years a new National Drug Formulary was published by the MOH in December 1999. Because the MOH did not conduct a comprehensive technical review, drugs in certain disease categories are missing, like HIV/AIDS and fixed dose combination drugs for Tuberculosis. Technical and financial support is needed to upgrade the Formulary and to establish a scheme for dissemination of the formulary throughout the country.
- 8 Drug registration in Mozambique is non-existent at this time, but the MOH has hired a person to work in this area. Technical assistance is needed to establish a comprehensive policy and service for registering new and currently used drugs. With the new drug law in 1998, private importers and pharmacies are now allowed to open for business, making drug registration even more of an urgent need.

Lessons Learned

1. Drug management systems *can* be improved with short-term technical assistance.

RPM technical assistance in Mozambique was three fold: development of local pharmacy advisors, working with a MOH team to harmonize national pharmacy procedures, and development of provincial pharmacy teams to supervise drug management of district facility staffs.

Improvements resulting from the technical assistance are as follows: the pharmacy advisors are serving as local experts for logistics management and rational drug use; national pharmacy procedures evolved into the *Normalized System of Drug Management* to document and control drug supply; and provincial pharmacy supervisors are using indicators to monitor drug management activities in the provinces. Since RPM technical activities began in the districts in 1998, indicators show that average drug loss due to expiration has decreased 87%, and average drug availability has improved 29% for the country.

2. If *sustainable improvement* is a goal, an enabling environment and proper incentives must support capacity-building efforts.

Because Mozambique is decentralizing its health system and the MOH needed assistance in capacitating local staffs, RPM trained provincial pharmacy teams to monitor drug management activities in the districts of each province. As part of the capacity building efforts, RPM also established a financial system to fund the provincial and district activities, whereby provincial pharmacy teams received funds for discreet activities and filed expense reports to RPM.

Now that the project is near its close, many of the procedures have become a natural part of daily activities. One thing that is lacking however, is financial support to continue supervisory visits to district facilities. The MOH maintains that enough funding is provided to provincial directorates to spend on health activities. However, provincial directorates insist that the funding is not nearly enough to provide all the goods and services demanded by the MOH. Coupled with this, provincial directorates have had to work in a decentralizing environment without written procedures to follow.

Therefore, RPM does not see the Mozambique environment as an entirely enabling one, until the poor financial situation and the promise of health-care-for-all-citizens conflict is reconciled.

3. The CPS district drug management strategy worked to build capacity.

A combination of wars, natural disasters and poor economic conditions have made the provision of quality health care in Mozambique problematic. Personnel responsible for drug management were poorly skilled, and lacked tools to manage drug activities, such as

ordering, receiving, inventory control, storeroom management, distribution, and rational drug use. The CPS district drug management strategy provided practical tools to provincial supervisors who needed them to capacitate health facility staff and to monitor their activities.

4. The drug management indicator data proved valuable as a monitoring tool

Monitoring of drug management activities in the provinces and districts was minimal to none before implementation of RPM activities. Provincial directors had no systematic way to supervise drug management in health facilities.

The drug management and rational drug use indicators introduced by the CPS strategy provided a graphic way for supervisors to understand problems in the drug sector of their province. With this data, supervisors can plan and implement suitable interventions.

5. Decentralization requires planning and should provide written procedures for local staff to understand and follow

The government of Mozambique developed a policy of gradual decentralization to take place over several years. With this policy, provincial directors are confused about their real authority and responsibility at times, and lack human and financial resources to make necessary changes. This affected steady implementation of RPM activities, and partly contributed to work being limited to only eight of the country's ten provinces.

6. The USIAD Cooperative Agreement mechanism provided flexibility for RPM to meet USAID's goals in the arena of drug management

The Mozambique program evolved over time, partly because USAID wanted to see how a program such as RPM's could fit into the policies of a developing country that had emerged from a long civil war. Using results of the pharmaceutical sector assessment, the MOH indicated the type of assistance they would like from RPM, and USAID provided enough funding for development of drug management training materials and a national training course in 1995. Seeing the results of the first course, the MOH asked for additional courses in the three regions of the country. Using funds provided by USAID and leveraging donor funds, RPM completed this work in 1995/1996.

At this point USAID began regular funding of the project for RPM to focus on capacitating drug management personnel in the provinces and districts. Without the flexible cooperative agreement mechanism, RPM would not have been able to quickly adapt to the wants and needs of the MOH, and establish USAID as one of the leaders in the drug management arena.

Annex 1: Reference Documents Produced During the RPM Mozambique Program

1. *Basic Techniques for Managing Drugs and Supplies: A Five-Session Tool for Capacity Building, Planning, and Supervision*, Management Sciences for Health, March 1999 (Portuguese and English)
2. *Drug Management Courses in Mozambique*, Management Sciences for Health, November 1999 (Portuguese and English)
3. *RPM Support of Drug Use Studies in Mozambique*, Management Sciences for Health, October 1999 (English)
4. *RPM Complements Preparation of New Pharmacy Technicians in Mozambique*, Management Sciences for Health, January 2000 (English)
5. *Financial Burden of Supervising Government Pharmaceutical Services in Mozambique*, Management Sciences for Health, February 2000 (English)
6. *Gestão do Aproveitamento e Uso Racional de Medicamentos: Guia de Sessão* (drug management course participant's manual), Management Sciences for Health, January 1999 (Portuguese)
7. *Gestão do Aproveitamento e Uso Racional de Medicamentos: Guia do Formador* (drug management course trainer's manual), Management Sciences for Health, January 1999 (Portuguese)
8. *Mozambique Pharmaceutical Sector Assessment Final Report*, Management Sciences for Health, January 1994 (Portuguese and English)
9. *Study of Private Pharmacy Sector*, Management Sciences for Health, February 1999 (Portuguese and English)
10. *Estimate of Total Throughput in Private Pharmacies*, Management Sciences for Health, May 1999

